To: Justice, JamesR[Justice.JamesR@epa.gov]
From: Gallagher, Kathryn
Sent: Tue 3/29/2016 10:09:58 PM
Subject: cd criteria statement

1.1   The Freshwater Cadmium Criteria

Freshwater Acute Criterion, the Criterion Maximum Concentration (CMC)

$$CMC = e^{(0.9789 \times \ln(hardness) - 3.866)} \times CF$$

Where CF (conversion factor from total to dissolved) = 1.136672 - [(ln hardness) x (0.041838)].

The resultant **CMC of 1.8 µg/L** for dissolved cadmium at a hardness of 100 mg/L as $CaCO_3$. The CMC was derived to be protective of the commercially and recreationally important rainbow trout (*Oncorhynchus mykiss*), consistent with procedures described in the 1985 Guidelines, and is below all the SMAVs in **Table 7,** when the SMAVs are expressed on a dissolved basis. A comparison of the updated CMC to the 2001 CMC across various hardness levels is presented in **Table 12**.

Freshwater Chronic Criterion, the Continuous Concentration (CCC)

$$CCC = e^{(0.7977 \times \ln(hardness) - 3.909)} \times CF$$

Where CF (conversion factor from total to dissolved) = 1.101672 - [(ln hardness) x (0.041838)].

The resultant **CCC of 0.72 µg/L** for dissolved cadmium at a hardness of 100 mg/L is below all the SMCVs in **Table 9**. A comparison of the updated CCC to the 2001 CCC across various hardness levels is presented in **Table 12**.

Table 12. Freshwater CMC and CCC at Various Water Hardness.

Hardness (mg/L as CaCO₃)	CMC (µg/L Cd dissolved)		CCC (µg/L Cd dissolved)	
	2001 Criteria (superseded)	2016 Criteria	2001 Criteria (superseded)	2016 Criteria
25	0.52	0.49	0.09	0.25
50	1.0	0.94	0.15	0.43
75	1.5	1.4	0.20	0.58
100	2.0	**1.8**	0.25	**0.72**

150	3.0	2.6	0.33	1.0
200	3.9	3.4	0.40	1.2
250	4.9	4.2	0.46	1.4
300	5.9	5.0	0.53	1.6
350	6.8	5.8	0.59	1.8
400	7.7	6.5	0.64	2.0

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